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CŒLIOTOMY FOR PUERPERAL SEPTICÆMIA AND PERITONITIS.*

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The conditions under which it is desirable to make an abdominal section in the treatment of the inflammatory and septic complications of the puerperal state are as yet not definitely determined. The very practial nature of this subject—practical because of the large number of women who annually lose their lives from puerperal septicæmia —renders it one of perennial interest to the practitioner as well as to the obstetrician and gynæcologist. This paper has been prepared at the invitation of your president, with the hope that it, together with the discussion elicited, may prove of service in the solution of some of the problems involved. Cases of puerperal sepsis or peritonitis may be divided into two classes. 1. Those in which some pathological condition is present in the sexual organs of the woman before labor: 2 Those in which these organs are normal.

The first class embraces those cases af sepsis or peritonitis caused by the bruising or rupture of tumors situated in the pelvis, or of pus sacs or other septic accumulations in the Fallopian tubes, or other pelvic organs. It is unnecessary to discuss this aspect of our subject at length, as there is little difference of opinion concerning it, and the nature of its treatment is reasonably plain. Puerperal peritonitis, due to the bruising or rupture of tumors during labor, has long been recognized, being first called to the attention of obstetricians, perhaps, when it followed the tapping *per vaginam* or *per rectum* of ovarian tumors, which served as an obstruction to labor. Any variety of pelvic tumor (uterine fibroid, ovarian cyst, dermoid, etc.) may be bruised or have its blood supply cut off by torsion of its pedicle and become inflamed or gangrenous, setting up a more or less serious peritonitis. Dermoid cysts are especially liable to undergo inflammatory changes when they complicate a labor, torsion of the pedicle and bruising being the usual causes. The cardinal points to which attention should be called in this class of cases are, that the birth-

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canal and the lymphatics are not involved; hence, the conditions present are very similar to those in non-puerperal peritonitis. Prompt operation, with the removal of the tumor, has been followed by a high percentage of cures.

Puerperal peritonitis due to the rupture or bruising of pus-sacs or other septic accumulations in the uterine appendages, existing prior to labor, is not of frequent occurrence. This phase of our subject has not been systematically studied. The references to it in the literature are scanty. In 1891, in a paper entitled, Salpingitis considered in its Relation to Pregnancy and the Puerperal State, I discussed this subject, and reported three cases in which the bruising of pus-tubes during labor had set up peritonitis. I have personal knowledge of two other cases which occurred in this city. Of thirty-two eminent American gynæcologists, from whom I have received replies to a letter of inquiry concerning this among other subjects, I find that but three of them, Dr. Hirst of Philadelphia, Dr. W. E. B. Davis of Birmingham, and Dr. Edward Reynolds of Boston, have operated for peritonitis due to a pus-tube which had antedated labor. Each of these gentlemen operated upon one case. Dr. Coe of New York reports that he has assisted at such operations. My other correspondents either had no personal knowledge of such cases, or at the most have merely suspected that the diseased tube may have antedated the labor instead of resulting from infection after labor. This experience of my correspondents, together with my own, is, I think, conclusive evidence that this variety of puerperal peritonitis is not common, and therefore its importance is not so great as was anticipated some years ago.* The comparative infrequence of puerperal peritonitis due to this cause is explained by the fact, that women having even a single pus-tube, or other septic accumulation in the pelvis, are usually sterile.

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* In preparing this paper use has been made of material collected by means of a circular letter, which was sent to many eminent American gynæcologists. Replies have been received from thirty-two of them, as follows:

Drs. W. M. Polk, Egbert H. Grandin, Andrew F. Currier, Robert A. Murray, Herman J. Boldt, Malcolm McLane, Henry C. Coe, J. C. Edgar, Paul F. Munde, W. R. Pryor and A. Palmer Dudley, of New York, Drs. B. C. Hirst, J. M. Baldy, and E. E Montgomery, of Philadelphia: Drs. Howard A. Kelly and J. Whitridge Williams, of Baltimore; Drs. James H. Etheridge and E. C. Dudley, of Chicago; Drs. Edward Reynolds, J. R. Chadwick, E. W. Cushing and William H. Baker, of Boston; Dr. J. H. Carstens of Detroit, Dr. A. L. Smith of Montreal, Dr. J. H. Kellogg of Battle Creek, Dr. W. E. B. Davis of Birmingham, Dr. R. S. Sutton of Alleghany, Dr. S. C. Gordon of Portland, Dr. M. D. Mann of Buffalo, Dr. Archibald MacLaren of St. Paul, Dr. R. B. Maury of Memphis, and Dr. H. D. Fry of Washington.

The grave dangers resulting from the bruising or rupture of a diseased uterine appendage during labor, render the occurrence of a pregnancy, in a woman the subject of such conditions, highly undesirable until the diseased organ has been removed. Parturition under these circumstances is too dangerous to be encouraged, and conception should be avoided until the source of danger has been removed by operation.

The relative dangers of puerperal peritonitis of this variety, and the results of operation done for it, can not be determined at this time. The subject is too new, and our experience is too limited for more than inferential opinions. Theoretically the prognosis from operation should be relatively good, because as the uterus and pelvic connective tissues are not involved, the conditions are more nearly those of operation for peritonitis in a non-puerperal woman. At all events, it is a safe conclusion, that the proper method of treatment to be pursued is prompt operation, irrigation and drainage.

The second class of cases, in which sepsis or peritonitis results from infection of the birth-canal, in women having normal sexual organs previous to labor, is a far more important one than that just considered. This is a common type of so called puerperal fever. It embraces cases in which the infection is limited to the utero-vaginal canal, those in which the infection has spread to the broad ligaments through the pelvic lymphatics or veins, and those in which the infection has spread to the peritonæum, either by way of the Fallopian tubes or by way of the lymphatics. Because it is convenient we will consider first, cases of puerperal peritonitis, which, as we have seen, may arise either through the spread of the septic inflammation by way of the Fallopian tubes to the peritonæum, or by infection spreading through the lymphatics either directly through the uterus to its peritoneal covering, or by way of the lymphatics of the broad ligaments. I am not aware of any investigations which have definitely determined the clinical history of the two varieties of puerperal peritonitis to which reference has been made. I belive it is true that in the first variety (by way of the Fallopian tubes) relatively speaking, the inflammatory element is more, and the septic element is less, marked, whereas the reverse is true in the second class of cases (by way of the lymphatics). In the first class of cases, I belive that it is common to have marked efforts at localization of the peritonitis, by means of the pouring out of inflammatory lymph, and that where this result is accomplished many of these cases go on to a natural cure, and that more of them result in the formation of post-puerperal pus-tubes and of circumscribed intra-peritoneal collections of pus. On the other hand, in the cases in which

septic lymphangitis is a marked feature, the element of peritonitis is merely an epiphenomenon, the condition present being a general septicæmia.

Puerperal peritonitis of the first class may end in death or recovery within a few days, or it may continue for several or even many weeks. Lymphatic peritonitis is of relatively short duration, many cases having a fatal termination after a course of a few days. Bearing these facts in mind, I find no evidence that abdominal section has been performed for lymphatic peritonitis in any considerable number of cases. The reports of cœliotomies for puerperal peritonitis with which I am most familiar show that the operations have been done in general after the end of the first week; in other words, at a time in which women the subjects of lymphatic peritonitis have either died, or have begun to recover. As supporting this inference I find that among my correspondents only four—Drs. Boldt, Polk, Carstens and Etheridge—have performed cœliotomy for general peritonitis within seven days after labor, and only four—Drs. Smith, Etheridge, Polk and Baldy—have operated for localized peritonitis within the same limit of time. Seventeen of them have operated for puerperal peritonitis later than the seventh day of the puerperal period.

Lymphatic puerperal peritonitis is not amenable to treatment by cœliotomy. I know of nothing, either in my own experience or in the literature, which gives the least encouragement for operating upon this class of cases. All that have been operated upon have died. It is not difficult to understand why operation done for lymphatic peritonitis should accomplish so little. A simple cœliotomy, with washing out of the peritoneal cavity, does not influence the principal seat of trouble, which is in the uterus and pelvic lymphatics, and necessarily it can not influence the multiplication of germs which already may have entered into the general circulation. The more radical operation of hysterectomy offers but little in these cases, as by the time peritonitis has become a marked feature, either the patient is so reduced as to be unable to withstand the shock of a serious operation, or she is already suffering from well-marked general septicæmia. These cases should be operated upon at a much earlier stage, before the development of peritonitis or marked general septicæmia. Cases of puerperal peritonitis in which the septic element is less marked are more amenable to treatment by operation. Polk and Outerbridge have reported successful cases of cœliotomy for localized peritonitis done within the first week after labor, and many cases are on record in which cœliotomy has been performed for localized peritonitis at a later period. I have nothing new to offer concerning the indications for operation in puerperal peritonitis. So far as I know patients op-

erated upon for general peritonitis have died; hence, excepting the hope that the diagnosis may be wrong, one would hardly be justified in recommending operation with such a diagnosis. In cases of localized peritonitis, during the first few days of the attack, cœliotomy should be done if the attack be a severe one which does not yield promptly to treatment. In cases presenting well-marked local lesions, to be made out by a bimanual examination, the indication for operation is more urgent than in those in which nothing can be determined by examination. In my judgement such cases should be carefully studied, and operation be elected or rejected because of the conditions present—the symptoms and the general course of the case—rather than in accord with any rules applied to such cases in general. Cœliotomy is certainly indicated if the attack of peritonitis be a severe one, which does not yield promptly to medicial treatment. Also, later in the course of puerperal peritonitis, operation is indicated if the patient fails to improve, and is demanded should the case take an unfavorable course. In such cases, however, it should not be forgotten that bimanual examination will usually disclose marked local lesions.

At the present time it is safe to conclude that the prognosis of cœliotomy done for general puerperal peritonitis is fatal. In cases of localized peritonitis it is best in those cases in which the inflammatory process has become well localized, and in which sepsis is absent, the case having resolved itself into one of pyosalpinx, abscess of the ovary or pelvic abscess of puerperal origin. The prognosis is fairly good in cases of circumscribed peritonitis operated upon promptly, that is within two or three days. Cases which have gone from bad to worse, and in which the operation is done as a last resort, usually terminate fatally.

We have still to deal with cases of infection of the birth-canal, in which the progress of the disease is from bad to worse, in spite of irrigation and curettement of the utero-vaginal canal. In these cases septic intoxication, or beginning septicæmia, are marked features, absorption of ptomaines or of micro-organisms taking place from the uterus or vagina. In these cases peritonitis, cellulitis, or lymphangitis, are either absent or in their incipiency—the infected uterus is the nidus of the morbid process. Some years ago such a case would have been treated by a continuance of the irrigation and by internal medication. Under this method of treatment undoubtedly a few cases have recovered, but in the great majority, when, in spite of curettement and through irrigation of the uterus, the septic process increases instead of diminishing in intensity, the issue is a fatal one. The proposition to perform hysterectomy in such cases, and thus to

remove the seat of the disease, has the merit of being logical. This proposition has been carried into effect by Kelly and Smith with a favorable result, and by Montgomery with a fatal issue. I have read of another successful case in the hands of of a German operator, but am unable to find the reference. In these cases abdominal hysterectomy was preformed. In Kelly's case there was a beginning lymphangitis, in Smith's a beginning peritonitis, and in Montgomery's pus was found in the uterine sinuses.

At the present time I am prepared to advocate the performance of hysterectomy for infection of the uterus, when, in spite of thorough curettement, followed by copious irrigation of the utero-vaginal canal, and the use of an iodoform suppository and gauze within the uterus, the septic symptoms increase in severity. In general, the less radical measures of treatment should be employed for twenty-four or forty-eight hours, this time limit to be varied according to the severity of the septic symptoms. In such cases, not only should the uterus be curetted and douched, but the patient should be well purged with salines. The use of quinine, baths and anodynes should not be neglected. In all such cases, the general condition of the patient, including the pulse, temperature, stomach and *morale*, is the best guide in deciding for or against the immediate resort to hysterectomy.

At this time the great success which has been achieved in hysterectomy, done by way of vagina, for non-puerperal conditions, in the hands of the French school of surgeons, raises the question whether or not this method of operating should not be selected in puerperal cases. Experience alone must determine this question. This is one of the problems of the future, as only a small number of cases have as yet been operated upon by the lower route. Upon theoretical grounds, I am not inclined to advocate hysterectomy by the vagina for puerperal infection, as when it is employed we are precluded from inspecting, irrigating and widely draining the peritoneal cavity. This method would best fulfill the indications when employed very early in the course of the disease, when the chances of peritonitis would be small and the necessity for extensive drainage of the peritoneal cavity absent. Because of the time saved, the use of the method of forci-pressure instead of the ligature is indicated.

The advocates of the vaginal route for removing the diseased structures from the pelvis will undoubtedly take issue with the general position, that abdominal section is the operation indicated to deal with the various consequences of puerperal septic inflammation. I am prepared to agree with them that large pus accumulations can be more safely dealt with by way of the vagina than by operation from above,

but with this exception, from my point of view, the preferable method of operating for puerperal septic inflammation and its results is by cœliotomy.

The present status of the subject of cœliotomy for puerperal septicæmia and peritonitis may be summed up as follows:

Cases may be divided into two classes—

(*a*) Those having morbid conditions in the pelvis antedating labor such as tumors, pus tubes, or other septic accumulations, the bruising or rupture of which during labor leads to peritonitis or septicæmia. Prompt operation in these cases has given good results.

(*b*) Those having normal pelvic structures at the onset of labor. The infectious process may spread through the lymphatics to the peritonæum, and give rise to peritonitis, to cellulitis, and to septicæmia. It may spread by the way of the Fallopian tubes to the peritonæum, setting up peritonitis. Or it may be limited to the utero-vaginal canal. Cœliotomy is not indicated in lymphatic peritonitis, as the morbid process is to widespread to be reached by operation. Cœliotomy has been followed by a fatal result in cases of general peritonitis. The only ground for advising operations with such a diagonsis is the possibility of a mistaken diagnosis. The prognosis is best when cœliotomy is done for localized peritonitis, when the process has become well circumscribed and the element of sepsis eliminated; in other words, when the case has resolved itself into one of pyosalpinx, abscess of the ovary, or pelvic abscess of puerperal origin. The prognosis is good when cases of localized peritonitis are operated upon promptly, that is within two or three days. Cases which have gone from bad to worse, and in which the operation is done as a last resort, usually terminate fatally. Hysterectomy is indicated for those cases in which the infection is limited to the utero-vaginal canal, when, in spite of thorough curettement of the uterus, together with copious irrigation of the utero-vaginal canal, and the employment of proper systemic treatment, the infectious process increases in severity.

In dealing with the results of puerperal septicæmia by operation, cœliotomy affords the opportunity for satisfaction diagnosis and adequate treatment. The organs involved may be palpated or inspected, and when necessary the operation may be completed by thorough irrigation and satisfactory drainage. The vaginal route for operation is indicated for large pus accumulations which are found late in the puerperium.

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